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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 02/13/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/609,822

Applicant(s)

SEO ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-26 and 28-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-26 and 28-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claims 19-26 and 28-37 are pending. This action, dated February 6, 2004, is in response to the applicant's amendment filed on December 23, 2003.

Claim Objections

1. Claim 37 is objected to because of the following informality. On line 5 of claim 37, the examiner suggests replacing "." with "-". Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. Claims 19-21, 25-26, and 28-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Furukawa et al (hereafter Furukawa) (US 6,345,026).

In regard to claim 19, Furukawa discloses a recording and/or reproducing apparatus recording and/or reproducing data on a recording medium, comprising: a discriminator to discriminate a magnitude of a present mark of input data and magnitudes of leading and/or trailing spaces of the present mark (Fig. 1, elements 41-43); a generator to control generation of a write pulse waveform in accordance with a grouping table having width data of first and/or last pulses for the write pulse waveform (Fig. 1, elements 14 and 21 and Tables 1 and 2) according to the magnitude of the present mark of the input data and the magnitudes of the leading and/or trailing spaces (Fig. 1, elements 19 and 25 and Fig. 2); and a driver to drive a light source by converting the write pulse waveform into a current signal in accordance with driving power levels for the write pulse waveform (Fig. 1, element 64).

In regard to claim 20, Furukawa discloses that the generator includes: a write waveform controller to generate pulse width data to vary a width of the first pulse of the write pulse in accordance with the magnitude of the leading space and the magnitude of the present mark (Fig. 1,

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element 19) and to vary a width of the last pulse of the write pulse in accordance with the magnitude of the present mark and the magnitude of the trailing space (Fig. 1, element 25); and a write pulse generator to generate the write pulse waveform in accordance with the pulse width data (Fig. 1, element 63).

In regard to claim 21, Furukawa discloses that the write waveform controller comprises a memory in which the pulse width data of the first and/or last pulses for the write pulse waveform are stored, by grouping the magnitude of the present mark and the magnitudes of the leading and/or trailing spaces, into a short pulse group, a middle pulse group or a long pulse group (Fig. 1, elements 14 and 21 and Tables 1 and 2).

In regard to claim 25, Furukawa discloses that light power for a predetermined one of channels of the write pulse waveform is applied during a period corresponding to a varied width of the first pulse and during a period corresponding to a varied width of the last pulse (Fig. 1, element 33).

In regard to claim 26, Furukawa discloses that a light power for the predetermined channel is a write power (Fig. 1, element 33).

In regard to claim 28, Furukawa discloses that the generator generates pulse width data by varying a rising edge of the first pulse of the write pulse in accordance with the magnitude of the leading space and the magnitude of the present mark (Fig. 1, element 19; Fig. 2; and Table 1).

In regard to claim 29, Furukawa discloses that the generator generates pulse width data by varying a falling edge of the first pulse of the write pulse in accordance with the magnitude of the leading space and the magnitude of the present mark (Fig. 1, element 19; Fig. 2; and Table 1).

In regard to claim 30, Furukawa discloses that the generator generates pulse width data by varying a rising edge of the last pulse of the write pulse in accordance with the magnitude of the trailing space and the magnitude of the present mark (Fig. 1, element 25; Fig. 2; and Table 2).

In regard to claim 31, Furukawa discloses that the generator generates pulse width data by varying a falling edge of the last pulse of the write pulse in accordance with the magnitude of the trailing space and the magnitude of the present mark (Fig. 1, element 25; Fig. 2; and Table 2).

In regard to claim 32, Furukawa discloses a recording and/or reproducing apparatus recording and/or reproducing data on a recording medium, comprising: a generator to generate an adaptive write pulse by varying a falling edge of a first pulse of the write pulse in accordance with a magnitude of a leading space and a magnitude of a present mark and varying a falling edge of a second pulse of the write pulse in accordance with the magnitude of a trailing space and the magnitude of the present mark, based on at least one table storing width data of the first and/or second pulses in a leading and/or trailing space grouping format (Fig. 1, elements 14, 19, 21, 25, and 63; Fig. 2; and Tables 1 and 2); and a driver to drive the light source according to the adaptive write pulse (Fig. 1, element 64).

In regard to claim 33, Furukawa discloses an adaptive write pulse generating circuit, the adaptive write pulse being used for writing input data to an optical recording medium, comprising: a write pulse inputting unit inputting a write pulse, the write pulse including a first pulse, a last pulse and a multi-pulse train (Fig. 1, element 60); a generator generating the adaptive write pulse, by varying a falling edge of the first pulse in accordance with a magnitude of a leading space and a magnitude of a present mark; and varying a falling edge of the second pulse in accordance with a magnitude of a trailing space and the magnitude of the present mark, based on at least one table storing width data of the first and/or second pulses in a leading and/or trailing space grouping

format (Fig. 1, elements 14, 19, 21, 25, and 63; Fig. 2; and Tables 1 and 2); and an outputting unit to output the generated adaptive write pulse (Fig. 1, element 64).

In regard to claim 34, Furukawa discloses a recording and/or reproducing apparatus recording and/or reproducing data on a recording medium, comprising: a generator to generate an adaptive write pulse using a grouping table having width data of a-first and/or last pulses of a write pulse waveform (Fig. 1, elements 62-63); and a processor to process data on a recording medium (Fig. 1, element 60), wherein the adaptive write pulse includes a first pulse, a last pulse and a multi-pulse train (Fig. 2). The examiner notes that the pulse generator (Fig. 1, element 60) processes the information on the recording medium by breaking the recording marks if the information into a first pulse, last pulse, and a multi-pulse train.

In regard to claim 35, Furukawa discloses a recording and/or reproducing apparatus recording and/or reproducing data on a recording medium, comprising: a generator to generate an adaptive write pulse using a grouping table having width data of first and/or last pulses of a write pulse waveform according to a magnitude of a present mark of the input data and magnitudes of leading and/or trailing spaces of the present mark (Fig. 1, elements 62-63); and a processor to process data on a recording medium (Fig. 1, element 60), wherein the adaptive write pulse includes a first pulse, a last pulse and a multi-pulse train (Fig. 2). The examiner notes that the pulse generator (Fig. 1, element 60) processes the information on the recording medium by breaking the recording marks if the information into a first pulse, last pulse, and a multi-pulse train.

Claim Rejections - 35 USC § 103

3. Claims 22, 24, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa in view of Furukawa in view of Hara (US 6,044,055).

In regard to claim 22, Furukawa discloses the recording and/or reproducing apparatus of claim 21. Furukawa does disclose that the recording and/or reproducing apparatus further comprises a microcomputer to initialize the write waveform controller and control the pulse width data stored in the memory to be updated in accordance with write conditions.

Hara discloses a recording and/or reproducing apparatus comprising a microcomputer (Fig. 7, element 12) to initialize the write waveform controller (Fig. 7, element 4 and Col. 8, lines 34-36) and control the pulse width data stored in the memory to be updated in accordance with write conditions (Col. 8, lines 58-60 and Col. 10, lines 43-46 and 65-67). The examiner notes that because the microcomputer controls the write waveform controller (Fig. 7, element 4), the microcomputer would control the initialization of the write waveform controller when the write waveform controller is powered on or otherwise initialized. Also, the examiner notes that the microcomputer updates the pulse width data in accordance with the write condition of linear velocity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the recording and/or reproducing apparatus of Furukawa, a microcomputer to initialize the write waveform controller and control the pulse width data stored in the memory to be updated in accordance with write conditions, the motivation being so that the write waveform controller is not un-initialized and in a possibly unknown state and so that the pulse width data is updated in accordance the write condition of linear velocity.

In regard to claim 24, Furukawa discloses the recording and/or reproducing apparatus of claim 21 including a memory (Fig. 1, elements 14 and 21) that stores pulse width data of the first and/or last pulses for the write pulse waveform. Furukawa does not disclose that the memory

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stores pulse width data of the first and/or last pulses for the write pulse waveform for respective zones on the optical recording medium.

Hara discloses adjusting the pulse widths of first and/or last pulses of the write pulse waveform for respective zones on an optical recording medium (Col. 10, lines 43-46 and 65-67 and Col. 21, lines 13-18). The examiner notes that pulse width data is stored in a memory in the microcomputer. Hara further discloses that the pulse widths are varied to compensate for variations in the edge positions of marks at different linear velocities corresponding to the different zones (Col. 7, lines 65-Col. 8, lines 14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the memory of the recording and/or reproducing apparatus of Furukawa to store pulse width data of the first and/or last pulses of a write pulse waveform for respective zones on the optical recording medium, the motivation being to compensate for variations in the edge positions of marks at different linear velocities in the different zones and therefor increase the signal to noise ratio.

In regard to claim 36, Furukawa discloses a recording and/or reproducing apparatus recording and/or reproducing data on a recording medium, comprising: a generator to generate an adaptive write pulse using a grouping table having width data of first and/or last pulses of a write pulse waveform; and a processor to process data on a recording medium, wherein the adaptive write pulse includes a first pulse, a last pulse and a multi-pulse train. Furukawa does not disclose that the adaptive write pulse is different in respective zones on the recording medium.

Hara discloses adjusting pulse widths of first and/or last pulses of the write pulse waveform for respective zones on the optical recording medium (Col. 10, lines 43-46 and 65-67 and Col. 21, lines 13-18). Hara further discloses that the pulse widths are varied to compensate for variations in

the edge positions of marks at different linear velocities corresponding to the different zones (Col. 7, lines 65-Col. 8, lines 14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the adaptive write pulse of the recording and/or reproducing apparatus of Furukawa to be different in respective zones on the recording medium, the motivation being to compensate for variations in the edge positions of marks at different linear velocities in the different zones and therefor increase the signal to noise ratio.

4. Claims 23 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa in view of Nishiuchi et al (hereafter Nishiuchi) (US 5,568,461).

Furukawa discloses the recording and/or reproducing apparatus of claim 21 including a memory (Fig. 1, elements 14 and 21) that stores pulse width data of the first and/or last pulses for the write pulse waveform. Furukawa does not disclose that the memory stores pulse width data of the first and/or last pulses for the write pulse waveform depending on whether the input data is in a land track or a groove track.

Nishiuchi discloses a recording and/or reproducing apparatus that uses memory to store information for pulse patterns optimal for each of a land track and a groove track (Col. 14, lines 7-13 and 33-40) and teaches that using recording signals optimized for writing on a land or a groove will reduce error that is generated when the same recording signal is used for both lands and a grooves (Col. 2, lines 35-39 and Col. 6, lines 36-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the memory of the recording and/or reproducing apparatus of Furukawa to store pulse width data of the first and/or last pulses of a write pulse waveform depending on

whether the input data is in a land track or a groove track as suggested by Nishiuchi, the motivation being to reduce error caused by writing to land tracks and groove tracks in the same manner.

In regard to claim 37, Furukawa discloses a recording and/or reproducing apparatus recording and/or reproducing data on a recording medium, comprising: a generator to generate an adaptive write pulse using a grouping table having width data of first and/or last pulses of a write pulse waveform; and a processor to process data on a recording medium. Furukawa does not disclose that the write pulse waveform is based on whether input data is in a land track or a groove track.

Nishiuchi discloses a recording and/or reproducing apparatus that optimizes stores write pulse waveforms for either a land track and a groove track (Col. 14, lines 7-13) and teaches that using recording signals optimized for writing on a land or a groove will reduce error that is generated when the same recording signal is used for both lands and a grooves (Col. 2, lines 35-39 and Col. 6, lines 36-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for write pulse waveform of the recording and/or reproducing apparatus of Furukawa to be based on whether the input data is in a land track or a groove track as suggested by Nishiuchi, the motivation being to reduce error caused by writing to land tracks and groove tracks in the same manner.

Citation of Relevant Prior Art

5. Shoji et al (US 6,175,541) (Fig. 4A) and Minemura et al (US 6,654,325) (Fig. 6) disclose a recording and/or reproducing apparatus that uses grouping tables to adjust the widths of first and last pulses of a write pulse in accordance with the mark length and preceding or following space

length. Furumiya et al (US 5,490,126) discloses a recording and/or reproducing apparatus that adjust the widths of first and last pulses of a write pulse in accordance with the mark length and preceding or following space length (Fig. 2).

Response to Arguments

6. Applicant's arguments with respect to claims 19-26 and 28-36 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's arguments, see page 9, lines 5-7, filed December 23, 2003, with respect to claim 37 being in proper condition for allowance, have been fully considered but they are not persuasive. The examiner notes that claim 37 was indicated as being rejected in the Office action summary of the first Office action. However, the examiner failed to include the rejection of claim 37 even though the necessary prior art had been found. The examiner apologizes for any resulting delays and inconvenience and has made this Office action non-final to allow the applicant an opportunity to respond to the rejection of claim 37.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

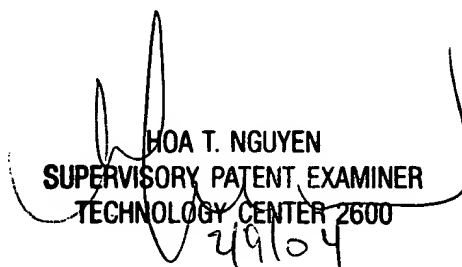
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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